

NASA TECH BRIEF

Langley Research Center



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Soft, Thermally Conductive Material

A material which consists of silicon rubber filled with a high percentage of silver-plated copper microspheres has been used to provide a soft, thermally conductive seat for a thermal switch. The thermal switch was to be used on a Mars lander vehicle, and it was necessary that the contacts of this switch be highly conductive thermally while also being soft enough to absorb chips or dust particles without a reduction in thermal conduction. The material, CHO-SEAL-1224, was found to satisfy both the softness and conductive requirements. It is normally used in electronic applications such as microwave gaskets. Testing revealed that the thermal conductance of this material was significantly improved by molding and curing it directly onto an aluminum plate. CHO-SEAL-1224 is normally produced in sheet form because of its intended use as gaskets.

In addition to the new use for this material as a thermal switch contact seat, it could be used in thin sheet form to prevent corrosion between dissimilar metals while maintaining good thermal communication. It could be used as thermal gasketing, which would be particularly suitable if sandwiched between layers of aluminum foil to minimize interface contact resistance.

The aluminum foil or other soft material could be molded with the rubber to form an integral composite. Another possible application could be heater blankets molded from the conducting rubber with embedded heater wires. The result would be more uniform heated surfaces due to the high lateral conduction of the rubber.

Note:

No further documentation is available. Specific questions, however, may be directed to:

Technology Utilization Officer
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Patent status:

NASA has decided not to apply for a patent.

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